farm and home

UNIVERSITY OF MINNESOTA
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FACT SHEET

AGRICULTURAL ENGINEERING

No. 7

New Farm Wiring Materials

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Until a few years ago, the only wiring material available for use in farm buildings were those designed for use in dwellings. In many cases these materials, such as steel-armored cable and fibrous-covered nonmetallic sheathed cable, proved to be unsatisfactory when exposed to the damp, corrosive conditions found particularly in livestock shelters.

NEW DEVELOPMENTS

The electric cable industry has now developed a cable with a plastic covering designated as UF (Underground Feeder) designed specifically for farm use (figure 1). This material is not subject

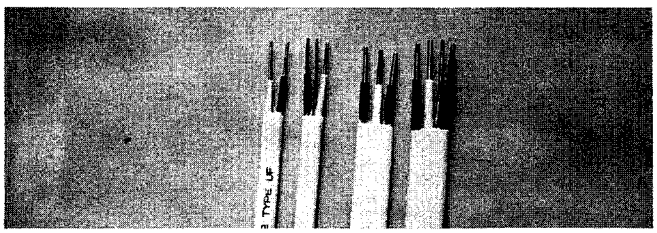

Fig. 1 Type UF conductors showing two- and three-wire cable with and without grounding conductor.

to deterioration from moisture or animal acids and can be buried directly in the ground. It is available in two or three conductor cable in No. 14, 12, and 10 gauge and with or without an uninsulated grounding conductor. It is also available in single conductor wire for use as underground feeders in larger sizes.

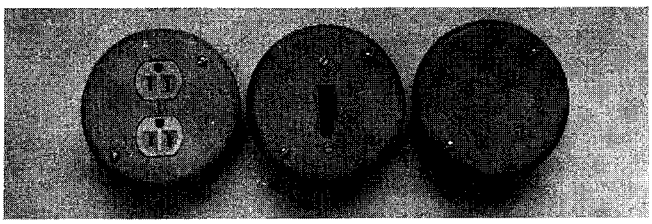

Fig. 3 Plastic box assembly showing grounding duplex receptacle, switch cover, and blank cover.

Other new developments now make a completely corrosion resistant nonmetallic wiring system possible.

A glass fiber reinforced plastic box (figure 2) has beeen developed which is virtually indestructable. Both switch box and 4-inch octagon boxes are available. Blank covers, switch plate covers, and duplex receptacle covers (figure 3) are available for the 4-inch octagon box. A molded nylon box connector (figure 4) and plastic nailing straps complete the nonmetallic system.

Many new types of solderless connectors have been developed. One of the newest is a plastic covered stainless steel spiral spring (figure 5) which maintains a constant tension on the conductors. Continued heating and cooling of the conductors does not result in a loose connection.

Heavy-duty flexible extension cords are now available in conspicuous yellow or red, which cause

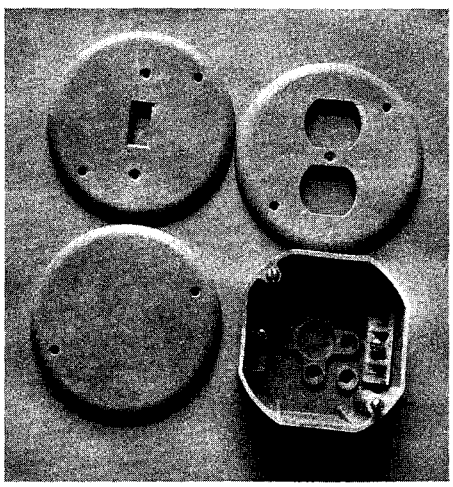

Fig. 2 Glass fiber reinforced plastic box with three cover plates available.

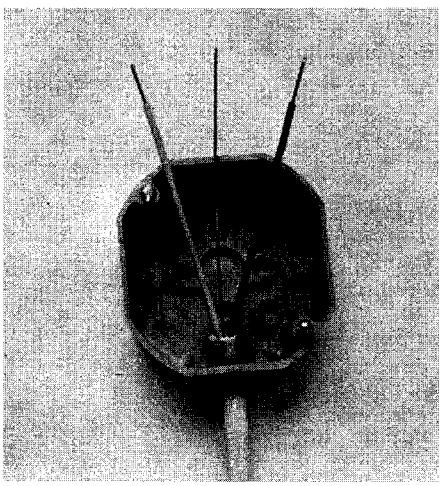

Fig. 4 Plastic box showing the use of a nylon box connector.

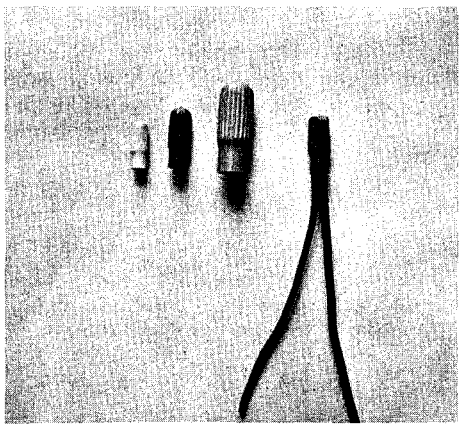

Fig. 5 Plastic covered solderless connectors suitable for wire sizes No. 18 through 10.

a person to subconsciously avoid stepping on the cord. Another innovation is a more compact 3-conductor parallel construction (figure 6) which has extraordinary ability to withstand physical abuse. The center conductor is a green grounding conductor. The cord is flat so it will not roll if stepped on.

Remote control switching (figure 7) is a great convenience in many farm wiring applications where it is desirable to control a light from several locations. By using low voltage, small-sized wires to the switches, it is possible to save substantially in the wire needed. There are at least four companies making remote control switches, and each system affords special features. Each one uses a master control panel which makes it possible to control all lights from one convenient location. The system shown uses the transformer at each light to be controlled. The photograph also shows the master panel and a single switch.

A new motor circuit cable (figure 6) with a heavy-duty plastic insulation is available for use with heavy-duty motors on the farm. It contains two No. 8 stranded wire conductors with a No. 12 green covered grounding conductor. It can be used on motor sizes up to 7½ horsepower depending on the length of run.

Several Minnesotans have been electrocuted when using or coming in contact with ungrounded portable equipment powered by electric motors which have shorted. This can be prevented by using a grounding conductor with appropriate receptacle and plug, as shown in figure 3.

Most portable appliances now come with a three-prong plug. In order to use this equipment safely you MUST have a qualified electrician install new receptacles to receive these plugs. Present

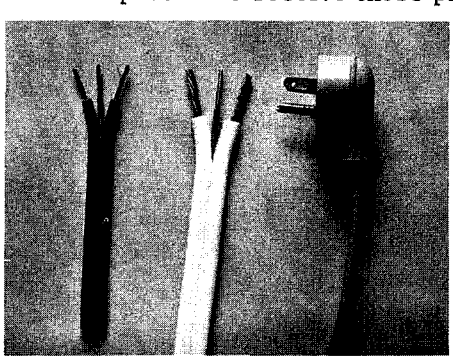

Fig. 6 Heavy-duty extension cord, motor circuit cable, and grounding type appliance cord with plug.

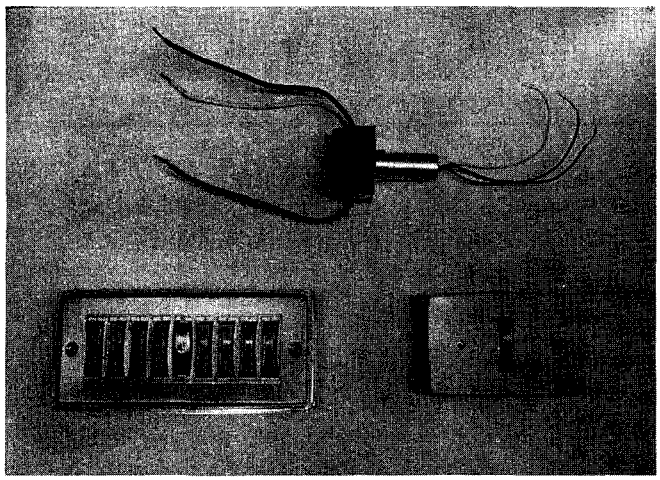

Fig. 7 Components of one type remote control switching system.

equipment having a two-prong plug can be plugged into these new receptacles, however no additional protection is given.

You can purchase an adapter to connect a three-prong plug to a regular ungrounded outlet. This nullifies the intended safety feature of the three-prong plug and the use of an adapter is not recommended. Use a three-prong plug only with a three-wire grounded receptacle.

In this age of conveniences, a handy addition to the farmstead is an intercommunication system. A communication system between the house and barn, house and farm shop, for example, can save many steps. The housewife can call her husband for important phone calls or for dinner. The system shown has a radio which can pipe the radio broadcast to the various buildings through the same system.

Regardless of the wiring materials used on the farm it is essential that they be properly installed. Only qualified persons should attempt wiring. Consult your electric contractor, electrician, or power supplier when planning new wiring or replacing existing wiring.

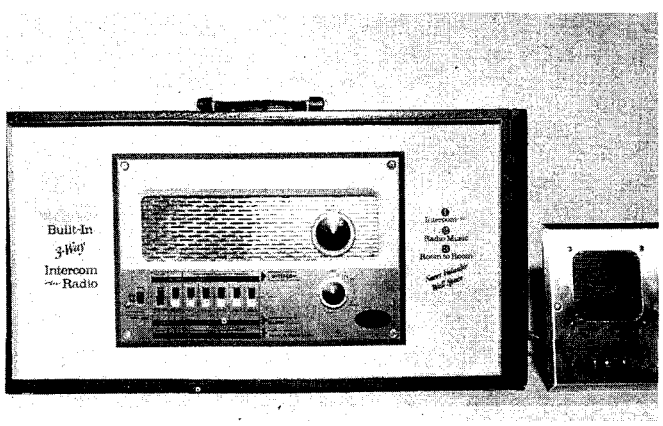

Fig. 8 An intercommunication set with radio.

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